The in vivo performance of ferrocenyl tamoxifen lipid nanocapsules in xenografted triple negative breast cancer.

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Résumé en anglais	Triple-negative breast cancers (TNBC) represent the most aggressive form of breast cancers and their treatment are challenging due to the tumor heterogeneity. The high death rate and the limited systemic treatment options for TNBC necessitate the search for alternative chemotherapeutics. We previously found that FcOHTAM, an organometallic derivative of hydroxytamoxifen, showed in vitro a strong antiproliferative effect on various breast cancer cell lines, including MDA-MB-231 cells, the archetype of TNBC. In this study, we developed stealth FcOHTAM loaded lipid nanocapsules (LNCs) to further evaluate this novel drug on a TNBC xenografted model. Cell cycle analysis of MDA-MB-231 cells confirmed the preservation of the drug activity through LNCs causing a cycle arrest in phase S after 48 h exposure at the IC50 concentration (2 µm). Two intraperitoneal injections of FcOHTAM loaded LNCs (20 mg/kg) administered to luciferase-transfected MDA-MB-231 tumors bearing mice led to a marked delay in tumor growth. As a consequence, a significantly lower tumor volume was obtained at the end of the experiment with a difference of 36% at day 38 compared to the untreated group. These results represent the first evidence of an in vivo effect of FcOHTAM and ferrocenyl derivatives in general on xenografted breast tumors.
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